AMEND THE ABSTRACT:

This new foot pad or pedal type exerciser allows [[for]] normal walking, jogging, and running in place on pedals (16, 17) reciprocal primarily back and forth, and provides means for returning the pedal from varying stride lengths to a forward step-down position in response to a user's end of stride action of stepping down on the forward pedal and lifting the other foot from the rear pedal. Improved step impact cushioning is provided compared to treadmills, the only other exerciser allowing automatically variable length normal stepping type strides, with cushion means (14, 15) on or under the pedal, some versions providing vertical pedal deflection means (40, 41) to both reduce step-down forces and provide energy to return [[to]] the opposite pedal. Mechanical and pneumatic versions are described, as are user powered and motorized versions, both types providing automatic stride length and speed variation and stopping means (131, 132) responding to the user's foot force.

AMEND THE SPECIFICATION:

(p. 2, l. 33:)

Various simpler exercisers , typically called striders, involve pedals or foot pads that move back and forth, staying in a single plane or arc. Another provides vertical motion independently of its back and forth motion , but balances the user's weight between the two pedals. These all allow variable length strokes or strides, but none provides the easy, normal walk-jog-run action of stepping down on, and transferring essentially all the weight to the forward foot, and freely swinging the unweighted trailing foot forward while pushing back on the weighted foot, then stepping down to end the stride at any point in each stride, from one stride to the next. These units allow only balancing the user's weight more or less continuously between the two pedals while the feet are pushed backward and forward in equal strokes in opposite

directions from the user's center of gravity. Again, this results in a constrained and laborious feel, unlike normal walk-run action in which each leg is [[completely]] unweighted on each forward return stroke.

(p. 3, l. 30:)

Among the wide variety of pedal or foot pad machines, only the elliptical motion cycle seems to provide a reasonable approximation of the normal walk-run action, but stroke or stride is not automatically variable , though some may be adjustable. Of all the pedal or foot pad type machines allowing variable strokes or strides, none provides realistic, normal walk-run stride action including forward foot step down with essentially full weight transfer to that foot (involving placement of the user's center of gravity essentially directly above it), and a [[completely]] largely unweighted opposite, returning foot, free of any parts of the machine with automatically varying stride lengths from stride to stride.

(p. 5, l. 16:)

A supporting object is to provide a walk-run reciprocating pedal exercise machine in which the return of each pedal forward to the step-down position from varying stride lengths is initiated and caused by the user's front foot step-down and accompanying [[opposite]] rear foot [[lift-off]] unweighting action, these two essentially concurrent actions always marking each end of stride. Thus, the user's end of stride action of front foot step-down and rear, returning foot [[lift-off]] lifting at varying stride lengths will cause the rear pedal to quickly return to its forward step-down position in time for the next (returning foot) step-down, the pedals essentially following the user's varying strides and even anticipating each next stride, the rear pedal starting to move forward to be positioned for the next step-down immediately upon step-down on the opposite, front pedal or [[lift-off]] lifting of the rear foot [[from]] at the rear pedal.

(p. 20, l. 34:)

Figs. 9 and 10 are plan and side elevation views respectively of a powered version of the invention wherein an electric motor drives and regulates the speed of pedal travel rearward when the pedal is weighted and down. In this version pedal return is not dependent on downward force and motion of the opposite pedal, but returns under spring force when ~~of the opposite pedal, but returns under spring force when~~ released by the user's foot force and the driving force of the motor drive. Many of the parts in this machine are basically the same in form and function as in the Fig. 1 version including a Base 10, Track Bar Pivot Tabs 11, Track Bars 12 and 13, Spring Dampers 14 and 15 and a Right Pedal 16 and Left Pedal 17. Instead of wheels attached to the pedals, light weight tubular Rollers 60 (preferably of plastic material) are spaced and held in place by a Right Roller Spacer 61 and a Left Roller Spacer 62 (also preferably of light weight plastic), each having an inverted "U" shape to span both sides of its corresponding Track Bar 12 and 13 and having tab projections extending into the hollow centers of the Rollers 60. Thus, each pedal will roll along its corresponding track bar resting on the Rollers 60 while the rollers roll along the two flanges of the track bar as in a roller bearing, the rollers and the spacers moving half as far as the pedals. This design allows the pedal and the total assembly to be lighter, with more evenly distributed loading and no heavy wheel bearings and attaching points on the pedals. A Right Return Lug 65 on the underside of Pedal 16 and a Left Return Lug 66 on Pedal 17 engage corresponding slots in the top of Right Roller Spacer 61 and Left Roller Spacer 62 respectively to insure the return of the roller assemblies forward on each return stroke when little downward force will exist on the rollers.

(p. 22, l. 32:)

When the Motor 69 is running, rotation of the Drive Drum 71 is clockwise as shown, driving the Drive Wheel 73 counter-clockwise and driving the Pedal 16

rearward as indicated. The inclined Drive Wheel Spring 75 maintains a driving force between Pedal 16 and the Drive Wheel 73 and between the Drive Wheel 73 and the Drive Drum 71 throughout the rearward travel of the pedal while the user's [[wejght]] weight holds the pedal down. The floating, or spring-loaded Drive Wheel 73 insures maintaining the driving contact over a range of user weights and resulting pedal down stroke levels. The Left Pedal 17 operates in the same way in conjunction with its Drive Wheel 74 and Drive Drum 72. For simplicity, the Drive Wheel Spring 75 is a double spring as seen in Fig. 11 having a bottom or base wire section joining the two upwardly inclined coils and drive wheel supporting axes at the top ends, the base wire section passing under the base of the Gearbox 70 through a groove in same as shown to hold the Drive Wheel Spring 75 in place.

(p. 23. l. 31:)

In Fig. 12 an additional advantage of the combination of separately moving pedals and floating drive wheels is shown. The Right Drive Wheel 73, in its center hub or bore has a Sprag Clutch 76 which allows the drive wheel to rotate freely counter-clockwise as previously described when the user is walking normally with some small rearward foot force. With the Sprag Clutch 76, if the user wants to stop and pushes forward on the Pedal 16, resisting rearward motion, the Drive Wheel 73 will start to be driven forward at the top with the Pedal 16 or clockwise, causing the Sprag Clutch 76 to grip its axle which is the top horizontal leg of the Drive Wheel Spring 75, applying a clockwise moment to the Spring 75 and pulling the Drive Wheel 73 away from and out of contact with the Drive Drum 71 as indicated. A Right Stop Bar 77 is fixed to the Motor 69 and Gearbox 70 and extending closely in front of the Drive Wheel 73 as shown in Fig. 10. When the user pushes forward on the Pedal 16 as just described, the Drive Wheel 73 contacts the Stop Bar 77 as shown in Fig. 12 and the Drive Wheel 73, with the Pedal 16 pushing down against the substantial spring force, will stop, holding the pedal at the point at which the user started to push forward on

the Pedal 16. This allows the user to stop at any point in a stride by leaning back and pushing forward on the pedal, both sides working the same, with a similar [[Right]] Left Stop Bar [[77]] 78 for Left Pedal 17, and to restart by simply pushing rearward again. The most likely point at which to stop would be at the step-down position, since the normal reaction in stopping is to immediately step down on the unweighted foot moving forward, so it is easy to push forward with the foot at step-down without any "leaning", the natural action in stopping being to step farther out forward just before the foot touches down and pushing forward with the foot at step-down. Another advantage of this brake or stop is its ability to continuously hold the pedal from freely moving forward when a user steps on the pedal, avoiding any accidental or unintended motion.

(p. 36, l. 12:):

In this pedal machine, as in Fig. 22, a relatively low rearward force will be required to drive the pedals and the negative pressure or vacuum required of the Pump 140 will be correspondingly low, depending on the diameter and cross section area of the Return Bellows 118 and 119. At times, the pressure could be positive, if the user inclines the machine above the friction drag angle and when the user wants to speed up by pushing harder (in a user powered machine). The Pressure Sensor 142 therefore, would be selected to sense pressures in a range from about minus five (-5) to plus five (+5) PSIG, and would transmit an electrical signal to the Speed Control 84 that is proportional to the pressure level sensed at any time. The Speed Control 84 would receive a low power signal from the Sensor 142 as described earlier for Fig. 13 and increase the speed of Motor 69 if an increased pressure is sensed, indicating increased user foot force and desire for [[incresed]] increased speed and conversely, decrease speed if a lower than "base" level pressure and foot force is detected. If there is no significant increase or decrease from the base level, the speed will remain constant and thus, only a short duration of increased foot rearward or forward force

would be required, during which the user would temporarily hold handrails or the like or use some "body english", giving a quick thrust at the end of a stride and rebalancing on the next step-down. The Speed Control 84 could also include programming to sense a more extreme level of pedal forward force and duration, indicating the user wants to stop, at which it would completely stop the Motor 69 and Pump 140.

(p. 38, l. 30:) (Add new paragraph)

Also, it can be appreciated that a user need not completely lift the rear foot from the pedal for return, but could allow the returning pedal to carry the foot forward as on a "cycle" pedal machine, while still "stepping down" most of his weight on the front pedal. End of stride is not dependent on complete lift-off of the rear foot from the rear pedal. Especially in powered return versions such as in Fig. 4 & 5, an alternate control input signal could be provided to allow manual or other signaling of end of stride for therapy use where the user has difficulty lifting and returning the feet, for example.